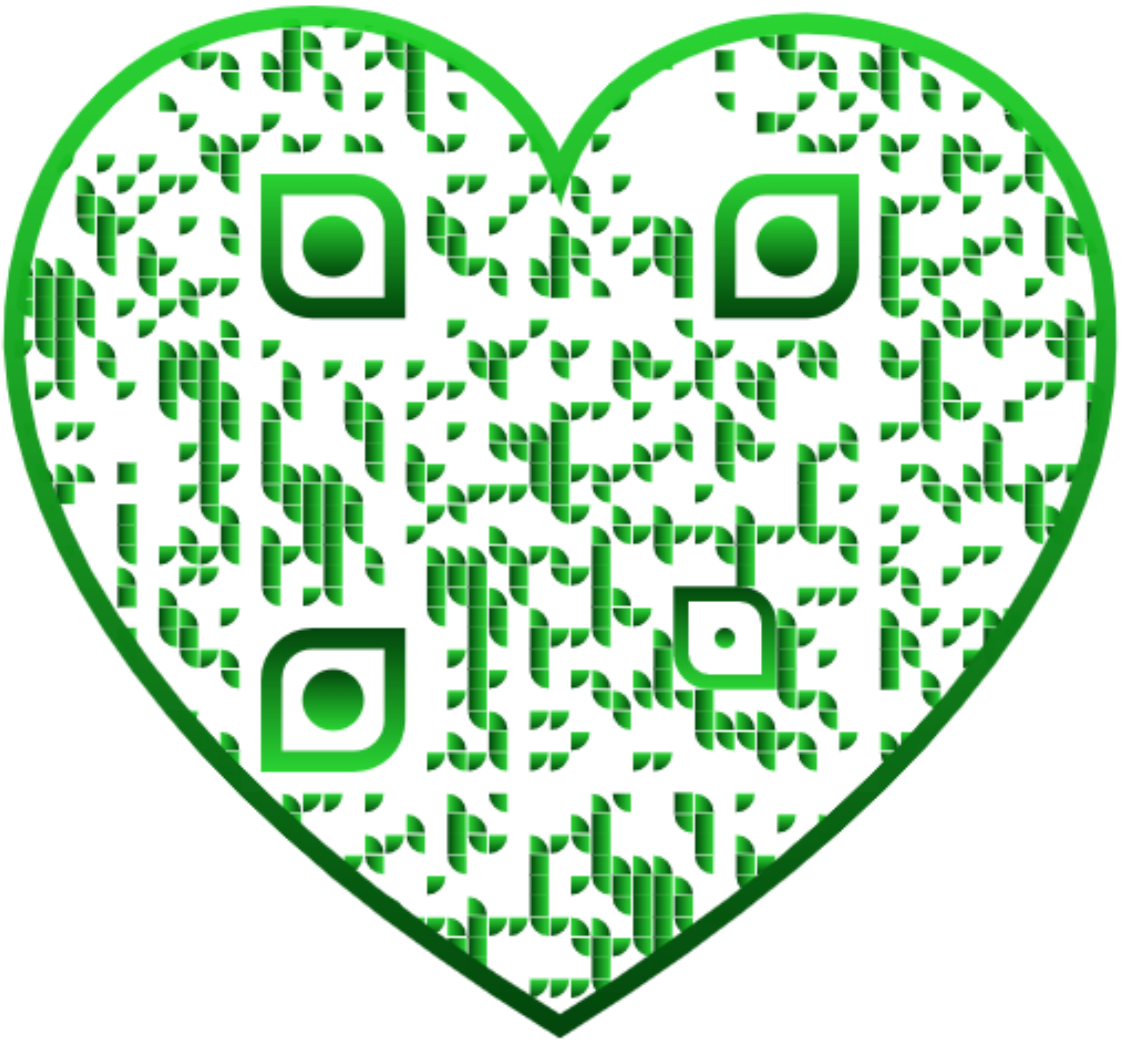
CHAPTER ONE

What is logic and philosophy?

- As a field of study, it is a branch of philosophy that deals with the study of arguments and the principles and methods of right reasoning. As an instrument, it is something, which we can use to formulate our own rational arguments and critically evaluate the soundness of others 'arguments.
- Philosophy is the study of general and fundamental problems concerning matters such as existence, knowledge, truth, beauty, law, justice, validity, mind, and language. It is a rational and critical enterprise that tries to answer fundamental questions through an intensive application of reason-an application that draws on analysis, comparison, and evaluation. It involves reason, rational criticism, examination, and analysis.

Lesson 1: Meaning and Nature of Philosophy

- It is important to note first that giving a clear-cut definition of philosophy is difficult because philosophy has no a specific subject matter to primarily deal with.
- Philosophy deals primarily with issues which are universal in nature.
- Philosophy is not as elusive as it is often thought to be. Nor is it remote from our various problems. It is unanimously agreed that the best way to learn and understand philosophy is to philosophize.
- Socrates once stated that "Wonder is the feeling of a philosopher, and philosophy begins in wonder".
- We all think and reflect in our own way about issues that matter us most we all participate, more or less, in philosophical issues, even though thinking alone cannot make us philosophers.
- Etymologically, the word philosophy comes from two Greek words: philo and ―sophia, which mean love and wisdom, respectively. Thus, the literal definition of philosophy is "love of wisdom".
- The ancient Greek thinker Pythagoras was the first to use the word philosopher to call a person who clearly shows a marked curiosity in the things he experiences. Anyone who raises questions is really showing a curiosity that can be described as a vital concern for becoming wise about the phenomena of the world and the human experiences.



What is the wisdom that philosophers seek?

- According to Socrates, wisdom consists of a critical habit and eternal vigilance about all things and a reverence for truth, whatever its form, and wherever its place.

Does it mean to deny the fact or the practical reality?

- To interrogate the obvious means to deal creatively with the phenomenal world, to go beyond the common understanding, and to speculate about things that other people accept with no doubt.
- Questioning/criticism is not the final end of philosophy, though raising the right question is often taken not only as the beginning and direction of philosophy but also as its essence.
- Raising the right question is an art that includes the ability to foresee what is not readily obvious and to imagine different possibilities and alternatives of approaching the apparent.
- Each question moves us from the phenomenal facts to a profound speculation.
- The philosophical enterprise, as Vincent Barry stated, is "an active imaginative process of formulating proper questions and resolving them by rigorous, persistent analysis".
- Therefore, philosophy is a rational and critical enterprise that tries to formulate and answer fundamental questions through an intensive application of reason- an application that draws on analysis, comparison, and evaluation.
- It involves reason, rational criticism, examination, and analysis.
- Accordingly, we can say that **Philosophy has a constructive side**, for it attempts to formulate rationally defensible answers to certain fundamental questions concerning the nature of reality, the nature of value, and the nature of knowledge and truth.
- At the same time, its **critical side** is manifested when it deals with giving a rational critic, analysis, clarification, and evaluation of answers given to basic metaphysical, epistemological, and axiological questions.
- Philosophy is **an activity**. It is not something that can be easily mastered or learned in schools. A philosopher is a great philosopher, not because he mastered philosophy, but because he did it. It is not his theory, but his extraordinary ability to philosophize; critically think, to conceptualize, to analyze, to compare, to evaluate, and to understand.

Lesson 2: Basic Features of Philosophy

1) Philosophy is a set of views or beliefs about life and the universe, which are often held uncritically.

- We refer to this meaning as the informal sense of philosophy or **having** a philosophy. Usually when a person says my philosophy is", he or she is referring to an informal personal attitude to whatever topic is being discussed.

2) Philosophy is a process of reflecting on and criticizing our most deeply held conceptions and beliefs.

- This is the formal sense of **doing** philosophy. These two senses of philosophy **having** and **doing** cannot be treated entirely independent of each other.
- If we did not have a philosophy in the formal, personal sense, then we could not do a philosophy in the critical, reflective sense. However, having a philosophy is not sufficient for doing philosophy. A genuine philosophical attitude is searching and critical; it is open-minded and tolerant- willing to look at all sides of an issue without prejudice.
- The accumulation of knowledge does not by itself lead to understanding, because it does not necessarily teach the mind to make a critical evaluation of facts that entail consistent and coherent judgment. Critical evaluations often differ.
- Philosophers, theologians, scientists, and others disagree, **first** because they view things from different points of view and with different assumptions. Their personal experiences, cultural backgrounds, and training may vary widely. A **second** reason philosophers disagree is that they live in a changing universe. People change, society changes, and nature changes. A **third** reason philosophers disagree is that they deal with an area of human experience in which the evidence is not complete.

3) Philosophy is a rational attempt to look at the world as a whole.

- Philosophy seeks to combine the conclusions of the various sciences and human experience into some kind of consistent worldview.
- Although there are difficulties and dangers in setting forth any worldview, there also are dangers in confining attention to fragments of human experience. Philosophy's task is to give a view of the whole, a life and a worldview.

4) Philosophy is the logical analysis of language and the clarification of the meaning of words and concepts.

- Certainly, this is one function of philosophy. In fact, nearly all philosophers have used methods of analysis and have sought to clarify the meaning of terms and the use of language.
- Some philosophers see this as the main task of philosophy, and a few claim this is the only legitimate function of philosophy.
- Such persons consider philosophy a specialized field serving the sciences and aiding in the clarification of language rather than a broad field reflecting on all of life‘s experiences. This outlook has gained considerable support during the twentieth century.

5) Philosophy is a group of perennial problems that interest people and for which philosophers always have sought answers.

- Philosophy presses its inquiry into the deepest problems of human existence. Some of the philosophical questions raised in the past have been answered in a manner satisfactory to the majority of philosophers. Many questions, however, have been answered only tentatively, and many problems remain unsolved.
- What are philosophical questions? The question “Did Ram make a false statement on his income tax return?” is merely a question of fact. However, the questions “what is truth?” and “What is the distinction between right and wrong?” have philosophical importance.

Core Fields of Philosophy

Lesson 3: Metaphysics and Epistemology

- Philosophy has different primary and secondary branches. This course deals only with the primary ones, namely Metaphysics, Epistemology, Axiology, and Logic.

3.1 Metaphysics

- Metaphysics is the branch of philosophy that studies the **ultimate nature of reality or existence**. It deal with issues of reality, God, freedom, soul/immortality, the mind-body problem, form and substance relationship, cause and effect relationship, and other related issues.
- Metaphysicians seek an irreducible foundation of reality or “**first principles”** from which absolute knowledge or truth can be induced and deduced. The term metaphysics is derived from the Greek words “meta” means (beyond, upon or after) and physika, means (physics). Literally, it refers those things after the physics.

- Questions like, what is real? seem too simple to bother asking. But consider George Knight‘s example about the existence of a floor and one will see that the question has far reaching implications: What is exactly the nature of the floor upon which you stand?
- It may seem to have a rather straightforward existence. It is obviously flat, solid, and smooth; it has a particular color; it is composed of an identifiable material, such as wood or concrete; and it supports your weight.
- Suppose, however, that a physicist enters the room and questioned about the reality of the floor. She will reply that the floor is made of molecules; that molecules consist of atoms, electrons, protons, and neutrons; and these, finally, of electric energy alone.
- It is evident that the question of reality is not as simplistic as it appears. If the reality of a common floor is confusing, what about the larger problems that presents themselves as humankind searches for the ultimate reality of the universe?
- Metaphysical questions are the most basic to ask because they provide the foundation upon which all subsequent inquiry is based. Metaphysical questions may be divided into four subsets or aspects.
- **i) Cosmological Aspect:** Cosmology consists in the study of theories about the origin, nature, and development of the universe as an orderly system. How did the universe originate and develop? Did it come about by accident or design? Does its existence have any purpose?

  ii) Theological Aspect: Theology is that part of religious theory that deals with conceptions of and about God. Is there a God? If so, is there one or more than one? What are the attributes of God? If God is both all good and all powerful, why does evil exist? If God exists, what is His relationship to human beings and the real world of everyday life?

  iii) Anthropological Aspect: Anthropology deals with the study of human beings and asks questions like the following: What is the relation between mind and body? Is mind more fundamental than body, with body depending on mind, or vice versa? What is humanity‘s moral status? Are people born good, evil, or morally neutral? People have obviously adopted different positions on these questions, and those positions influence their political, social, religious, and educational ideals and practices.

  iv) Ontological Aspect: Ontology is the study of the nature of existence, or what it means for anything to exist.

- Several questions are central to ontology: Is basic reality found in matter or physical energy (the world we can sense), or is it found in spirit or spiritual energy? Is it composed of one element (e.g., matter or spirit), or two (e.g., matter and spirit), or many? Is reality orderly and lawful in itself, or is it merely orderable by the human mind? Is it fixed and stable, or is change its central feature? Is this reality friendly, unfriendly, or neutral toward humanity?

3.2 Epistemology

- Etymologically, the word epistemology has been derived from the Greek words episteme, meaning knowledge, understanding, and logos, meaning study of. Epistemology is the **study of the nature, source, and validity of knowledge.** It seeks to answer of the basic questions as what is true? and How do we know?
- Epistemology is the other field of philosophy that studies about the nature, scope, meaning, and possibility of knowledge. It deals with issues of knowledge, opinion, truth, falsity, reason, experience, and faith.
- **Skepticism** in its narrow sense is the position claiming that people cannot acquire reliable knowledge and that any *search for truth is in vain*.
- A term closely related to skepticism is agnosticism. **Agnosticism** is a profession of ignorance in reference to ***the existence or nonexistence of God.***
- If we say reality can be known we should know sources of reality and validity of knowledge
- Are all truths ***absolute or relative is another issue (is knowledge subjective or objective)***
- What are sources of human knowledge? Central to most people‘s answer to that question is **empiricism** (knowledge obtained through the ***senses***).
- When individuals walk out of doors on a spring day and see the beauty of the landscape, hear the song of a bird, feel the warm rays of the sun, and smell the fragrance of the blossoms, they know that it is spring.
- *Sensory knowing for humans is* ***immediate and universal***, and in many ways forms the basis of much of human knowledge.
- The existence of sensory data cannot be denied but it is *incomplete and undependable*. (For example, most people have been confronted with the contradiction of seeing a stick

that looks bent when partially submerged in water but appears to be straight when examined in the air.)

- *Fatigue, frustration, and illness* also distort and limit sensory perception. In addition, there are
- sound and light waves that are inaudible and invisible to unaided human perception.
- Humans have invented ***scientific instruments*** to extend the range of their senses, but it is impossible to ascertain the exact dependability of these instruments since no one knows the total effect of the human mind in recording, interpreting, and distorting sensual perception.
- Confidence in these instruments is built upon speculative metaphysical theories whose validity has been reinforced by experimentation in which predictions have been verified through the use of a theoretical construct or hypothesis.
- **In general, sensory knowledge is built upon assumptions that must be accepted by faith in the dependability of human sensory mechanisms.**
- The advantage of empirical knowledge is that many sensory experiences and experiments are open to both **replication and public examination.**
- A second important source of human knowledge is **rationalism** (reason).
- The view that *reasoning, thought, or logic* is the central factor in knowledge.
- The rationalist, in emphasizing humanity‘s power of thought and the mind‘s contributions to knowledge, is likely to claim that the *senses alone cannot provide universal, valid judgments that are consistent with one another.*
- From this perspective, the *sensations and experiences humans obtain through their senses are the raw material of knowledge.*
- These sensations must be organized by the mind into a meaningful system before they become knowledge.
- **Rationalism in a less extreme form** claims that people have the power to know with certainty various truths about the universe that the senses alone cannot give.
- **In its extreme form**, rationalism claims that humans are capable of arriving at irrefutable knowledge independently of sensory experience.
- Formal logic is a tool used by rationalists

- *Systems of logic have the advantage of possessing internal consistency, but they risk being disconnected from the external world.*
- Systems of thought based upon logic are only as valid as the premises upon which they are built.
- A third source of human knowledge is **intuition**
- The direct apprehension of knowledge that is not derived from conscious reasoning or immediate sense perception.
- ***The direct apprehension of knowledge t***hat is not derived from conscious reasoning or immediate sense perception.
- Immediate feeling of certainty.
- Intuition occurs beneath the threshold of consciousness and is often experienced as a *sudden flash of insight*.
- Intuition has been claimed under varying circumstances as a ***source of both religious and secular knowledge.***
- Certainly many scientific breakthroughs have been initiated by intuitive hunches that were confirmed by experimentation.
- The weakness or danger of intuition is that it does not appear to be a safe method of obtaining knowledge when used alone.
- It goes astray very easily and may lead to absurd claims unless it is controlled by or checked against other methods of knowing.
- *Intuitive knowledge, however, has the distinct advantage of being able to bypass the limitations of human experience*.
- A fourth influential source of knowledge is **revelation**. Revealed knowledge has been of prime importance in the field of **religion.**
- It differs from all other sources of knowledge because it presupposes a transcendent ***supernatural reality*** *that breaks into the natural order.*
- Christians believe that such revelation is God‘s communication concerning the divine will.

- Believers in supernatural revelation hold that ***this form of knowledge has the distinct advantage of being an omniscient source of information that is not available through other epistemological methods.***
- The truth revealed through this source is believed by Christians to be **absolute and uncontaminated.**
- On the other hand, it is generally realized that **distortion of revealed truth can occur in the process of human interpretation.**
- Some people assert that a major disadvantage of revealed knowledge is that *it must be accepted by faith and cannot be proved or disproved empirically.*
- A fifth source of human knowledge, though not a philosophical position is **authority.**
- Authoritative knowledge is accepted as true because it comes from **experts** or has been sanctified over time as tradition.
- *In the classroom, the most common source of information is some authority, such as a textbook, teacher, or reference work.*
- Accepting authority as a source of knowledge has its advantages as well as its dangers.
- *Civilization would certainly stagnate if people refused to accept any statement unless they personally verified it through direct, firsthand experience.*
- *On the other hand, if authoritative knowledge is built upon a foundation of incorrect assumptions, then such knowledge will surely be distorted.*

Lesson 4: Axiology and Logic

4.1 Axiology

- Axiology is the **philosophical study of value**, which originally meant the worth of something.
- Axiology asks the philosophical questions of values that deal with notions of what a person or a society regards as good or preferable, such as What is a value?, Where do values come from?
- Axiology deals with the issues of value in three areas, namely **Ethics, Aesthetics, and Social/Political Philosophy.**

I. Ethics

- which is also known as Moral Philosophy,
- **Ethics is a science that deals with the philosophical study of moral principles, values, codes, and rules, which may be used as standards for determining what kind of human conduct/action is said to be good or bad, right or wrong.**
- Ethics has three main branches: meta-ethics, normative ethics, and applied ethics.
- Ethics raises various questions including what is good/bad? what is right/wrong, Are moral principles universal, objective, and unconditional, or relative, subjective and conditional?, What is the ultimate foundation of moral principles? The supernatural God? Human reason? Mutual social contract?, Social custom?, Does God exist? If so, is He Benevolent and Omnipotent?
- Ethics, or ethical studies, can be grouped into three broad categories: **Normative ethics, Meta ethics, and Applied Ethics.**
- **Normative ethics**: study and determine precisely the moral rules, principles, standards and goals by which human beings might evaluate and judge the moral values of their conducts, actions and decisions.
- **Meta ethics** is the highly technical philosophical discipline that deals with investigation of the meaning of ethical terms, including a critical study of how ethical statements can be verified.
- **Applied Ethics** is a normative ethics that attempts to explain, justify, apply moral rules, principles, standards, and positions to specific moral problems, such as capital punishment, euthanasia, abortion, adultery, animal right, and so on.

II. Aesthetics

- Aesthetics is the theory of beauty. It studies about the particular value of our artistic and aesthetic experiences. It deals with beauty, art, enjoyment, sensory/emotional values, perception, and matters of taste and sentiment.

III. Social/Political Philosophy

- Social/Political Philosophy studies about of the value judgments operating in a civil society. What form of government is best?, What economic system is best?, What is society?

4.2 Logic

- Logic is the study or theory of principles of right reasoning. It deals with formulating the right principles of reasoning; and developing scientific methods of evaluating the validity and soundness of arguments.

Importance of Learning Philosophy

- The unexamined life is not worth living
- There are many characteristics of self-actualization to whose achievement studying philosophy has a primordial contribution. Here below are some of them.

1) Intellectual and Behavioral Independence:- This is the ability to develop one's own opinion and beliefs. Among the primary goals of philosophy, one is the integration of experiences into a unified, coherent, and systematic world views. Studying philosophy helps us not only to know the alternative world views but also to know how philosophers have ordered the universe for themselves. As a result, we can learn how to develop and integrate our experiences, thoughts, feelings, and actions for ourselves, and thus how to be intellectually and behaviorally independent.

2) Reflective Self-Awareness:- self-actualization cannot be realized without a clear knowledge of oneself and the world in which one lives. Philosophy helps us to intensify our self-awareness by inviting us to critically examine the essential intellectual grounds of our lives.

3) Flexibility, Tolerance, and Open-Mindedness:- by studying different philosophical perspectives we can understand the evolutionary nature of intellectual achievement and the ongoing development of human thought. As we confront with the thoughts of various philosophers we can easily realize that no viewpoint is necessarily true or false- that the value of any attitude is contextual. Finally, we become more tolerant, open-minded, more receptive, and more sympathetic to views that contend or clash with ours.

4) Creative and Critical Thinking: - this is the ability to develop original philosophical perspective on issues, problems, and events; and to engage them on a deeper level. From the study of philosophy, we can learn how to refine our powers of analysis, our abilities to think critically, to reason, to evaluate, to theorize, and to justify.

5) Conceptualized and well-thought-out value systems in morality, art, politics, and the like: -

since philosophy directly deals with morality, art, politics, and other related value theories, studying philosophy provides us with an opportunity to formulate feasible evaluations of value; and thereby to find meaning in our lives.

- The other benefit of studying philosophy that should not be missed is that it helps us to deal with **the uncertainty of living.**

CHAPTER TWO

BASIC CONCEPTS OF LOGIC

Lesson 1: Basic Concepts of Logic: Arguments, Premises and Conclusions

- Logic is generally be defined as a **philosophical science that evaluates arguments.**
- An **argument** is a systematic combination of one or more than one statements, which are claimed to provide a logical support or evidence (i.e., premise(s) to another single statement which is claimed to follow logically from the alleged evidence (i.e., conclusion).
- An **argument can be either good or bad argument**, depending on the logical ability of its premise(s) to support its conclusion.

What is the Meaning of Logic?

- The word logic comes from Greek word logos, which means sentence, discourse, reason, truth and rule. Logic in its broader meaning is the science, which evaluates arguments and the study of correct reasoning.
- **We see lots of mistakes in reasoning in daily life and logic can help us understand what is wrong or why someone is arguing in a particular way.**

What is the Benefit of Studying Logic?

- We use logic in our day-to-day communications. As human beings, we all think, reason and argue; and we all are subject to the reasoning of other people. Some of us may think well, reason well and argue well, but some of us may not.
- *The ability to think, reason and argue well might **partially be a matter of natural gift.** However, whatever our natural gifts, they can be refined, improved and sharpened; and the study of logic is one of the best ways to refine one's natural ability to think, reason and argue.*
- Likewise, as academicians, our arguments must be logical and acceptable; and the tool to do so is provided by logic. In general, the following are some of the major benefits that we can gain from the study of logic:

- *It helps us to develop the skill needed to construct sound (good) and fallacy-free arguments of one's own and to evaluate the arguments of others;*
- *It provides a fundamental defense against the prejudiced and uncivilized attitudes that threaten the foundation of a civilized and democratic society;*
- *It helps us to distinguish good arguments from bad arguments;*
- *It helps us to understand and identify the common logical errors in reasoning;*
- *It helps us to understand and identify the common confusions that often happen due to misuse of language;*
- *It enables us to disclose ill-conceived policies in the political sphere, to be careful of disguises, and to distinguish the rational from irrational and the sane from the insane and so on.*

What is an Argument?

- When we define an arguments from logical point of view, it is a group of statements, one or more of which (the **premise**) are claimed to provide support for, or reason to believe, one of the other, the (**conclusion**). As is apparent from the above definition, the term argument has a very specific meaning in logic.
- It does not mean, for example, a mere verbal fight, as one might have with one's parent, spouse, or friend. Let us examine the features of this definition in detail.
- **First,** an argument is a group of statements. That is, the first requirement for a passage to be qualified as an argument is to combine two or more statements.
- A ***statement*** is a *declarative sentence that has a truth-value of either true or false.* That is, statement is a sentence that has truth-value.
- Hence, ***truth and falsity are the two possible truth values of a statement***. Look the following examples:

  a) Dr. Abiy Ahmed the current Prime Minister of Ethiopia.

  b) Mekelle is the capital city of Tigray Region.

  c) Ethiopia was colonized by Germany.
- Statement (a) and (b) are true, because they describe things as they are, or assert what really is the case. Hence, Truth is their truth-value. Whereas statement (c) is false because it asserts what is not, and Falsity its truth-value.

- N.B: Logicians used **proposition and statement interchangeably.** However, in strict (technical) sense, **proposition is the meaning or information content of a statement.** In this chapter, the term statement is used to refer premises and a conclusion.
- **However**, there are sentences that are not statements, and hence should be used to construct an argument. Examples:
  a) Would you close the window? (Question)
  b) Let us study together. (Proposal)
  c) Right on! (Exclamation)
  d) I suggest that you read philosophy texts. (Suggestion)
  e) Give me your ID Card, Now! (Command)
- **Second,** the statements that make up an argument are divided into ***premise(s)*** and ***conclusion.***
- That means, the mere fact that a passage contains two or more statements cannot guarantee the existence of an argument. Hence, **an argument is a group statement, which contains at least one premise and one and only one conclusion**.
- This definition makes it clear that an argument **may contain more than one premise but only one conclusion.**
- The claim that the statement attempts to justify is known as a **conclusion** of an argument; and the statement or statements that supposedly justify the claim is/are known as the premises of the argument.

Example-1:

All Ethiopians are Africans. (Premise 1)

Tsionawit is Ethiopian. (Premise2)

Therefore, Tsionawit is African. (Conclusion)

Example 2

Some Africans are black. (Premise-1)

Zelalem is an African. (Premise-2)

Therefore, Zelalem is black. (Conclusion)

The

- Former are said to be **good (well-supported**) arguments, the latter **bad (poorly-supported**) arguments (Therefore, it is bad argument, but it is still an argument).

- Identifying conclusion from argument is very difficult.
- Since it is impossible to analyze arguments without identifying a conclusion from premises, we need ***techniques that can help us to identify premises from a conclusion and vice versa.***
- **The first technique** that can be used to identify premises from a conclusion and vice versa is looking at an indicator word.

Here below are some Conclusion Indicators:

Therefore	Wherefore	Accordingly
We may conclude	Entails that	Hence
It shows that	Whence	Thus
We may infer	It implies that	As a result
It must be that	Provided that	So
It follows that	Consequently	

Example:

Women are mammals.

Zenebech is a woman.

Therefore, Zenebech is a mammal.

Based on the above rule, the conclusion of this argument is "Zenebech is a mammal" because it follows the conclusion indicator word therefore, and the other two statements are premises.

- If an argument does not contain a conclusion indicator, it may contain a premise indicator.

Here below are some typical Premise Indicators:

Since	Seeing that	Inasmuch as
Given that	As	For the reason that
For	As indicated by	In that
Because	Owing to	In that May be inferred from

Example:

You should avoid any form of cheating on exams because cheating on exams is punishable by the Senate Legislation of the University.

- Based on the above rule, the premise of this argument is "cheating on exams is punishable by the Senate Legislation of the University" because it follows the premise indicator word because, and the other statement is a premise.
  - *One premise indicator not included in the above list is* **for this reason.** ''This indicator is special in that it comes immediately after the premise it indicates and before the conclusion.
  - We can say that in the **middle place** between the premise and the conclusion, this indicator can be both premise and conclusion indicator.
  - ***Sometimes a single indicator can be used to identify more than one premise.***

Example

Tsionawit is a faithful wife, for Ethiopian women are faithful wives and Tsionawit an Ethiopian.

The premise indicator for '' goes with both Ethiopian women are faithful wives'' and Tsionawit is an Ethiopian". These are the premises. By process of elimination, Tsionawit is a faithful wife is the conclusion.

- Sometimes you may an **argument that contains no indicator all**: neither a conclusion indicator word nor a premise indicator word. When this occurs, the reader/ listener must ask himself or herself such questions as:

  What single statement is claimed (implicitly) to follow from the others?

  What is the arguer trying to prove?

  What is the main point in the passage?

  The answers to these questions should point to the conclusion.

  Example:

  Our country should increase the quality and quantity of its military. Ethnic conflicts are recently intensified; boarder conflicts are escalating; international terrorist activities are increasing.

- The main point of this argument is to show that the country should increase the size and quality of its military. All the rest are given in support of the conclusion. As you can see there are no indicator words.
- The following is the standard form of this argument:

- Ethnic conflicts are recently intensified. (P-1)
- Boarder conflicts are escalating. (P-2)
- International terrorist activities are increasing. (P-3)

  Thus, the country should increase the quality and quantity of its military. (C)

- Passages that contain arguments sometimes contain statements that are neither premises nor conclusion. Only statements that are actually intended to support the conclusion should be included in the list of premises.
- **Inference** is another concept. In the narrower sense it means the reasoning process expressed by the argument. And broadly it refers the argument itself.
- For the purpose of this course, we use the narrower sense of the term inference or inferential link between the premises and the conclusion of arguments.

Lesson 2: Techniques of Recognizing Arguments

2.1 Recognizing Argumentative Passages

- In a general way, ***a passage contains an argument if it purports to prove something; if it does not do so, it does not contain an argument.***
- Two conditions must be fulfilled for a passage to purport to prove something:
  1) At least one of the statements must claim to present evidence or reasons.
  2) There must be a claim that the alleged evidence or reasons supports or implies something- that is, a claim that something follows from the alleged evidence.
- The first condition expresses a **factual claim**, and deciding whether it is fulfilled often falls outside the domain of logic.
- The second condition expresses what is called an **inferential claim**. The inferential claim is simply the claim that the passage expresses a certain kind of reasoning process- that something supports or implies something or that something follows from something.
- An inferential claim can be either explicit or implicit. An **explicit inferential claim** is usually asserted by premise or conclusion ***indicator words*** *(*thus, since, because, hence, therefore, and so on). It exists if there is an indicator word that asserts an explicit relationship between the premises and the conclusions.
  Example:
  Gamachuu is my biological father, because my mother told so.

In this example, the premise indicator word "because" expresses the claim that evidence supports something, or that evidence is provided to prove something. Hence, the passage is an argument.

- An **implicit inferential claim** exists if there is an inferential relationship between the statements in a passage, but the passage contains no indicator words.
  Example: The genetic modification of food is risky business. Genetic engineering can introduce unintended changes into the DNA of the food-producing organism, and these changes can be toxic to the consumer.
- Sometimes it is difficult to identify whether a passage contain an argument. In deciding whether there is a claim that evidence supports or implies something keep an eye out

for(1) indicator words, and (2) the presence of an inferential claim between the statements. In connection with these points, however, a word of caution is in order.

- **First**, ***the mere occurrence of an indicator word by no means guarantees the presence of an argument.*** That the existing indicator word must use to indicate a premise or a conclusion.

  Example:

  - Since Edison invented the phonograph, there have been many technological developments.
  - Since Edison invented the phonograph, he deserves credit for a major technological development.

- In the first passage the word "since" is used in a temporal sense. It means "from the time that". Thus, the first passage is not an argument. In the second passage "since" is used in a logical sense, and so the passage is an argument.
- **Second**, it is not always easy to detect the occurrences of an inferential relationship between statements in a passage, and the reader may have to review a passage several times before making a decision.
- Therefore, *in deciding whether a passage contains an argument one should try to* ***insert mentally some indicators words among the statements*** *to see whether there is a flow of ideas among the statements.*

2.2 Recognizing Non-argumentative Passages

- Non-argumentative passages are passages, which lack an inferential claim. As was discussed previously, for a passage to be an argument, it not only should contain premises and a conclusion but also an inferential claim or a reasoning process.

1, Simple Non-inferential Passages

- Simple non-inferential passages are unproblematic passages that lack a claim that anything is being proved.
- Such passages contain statements that could be premises or conclusions (or both), but what is *missing is a claim that any potential premise supports a conclusion or that any potential conclusion is supported by premises.*

- Passages of this sort include warnings, pieces of advice, statements of belief or opinion, loosely associated statements, and reports.

  *A **warning** is a form of expression that is intended to put someone on guard against a dangerous or detrimental situation.

  Example:

  Whatever you promise to tell, never confide political secrets to your wife.
- In this passage, no evidence is given to prove that the statement is true; and if no evidence is given to prove that the statement is true, then there is no argument.

***A piece of advice** is a form of expression that makes a recommendation about some future decision or course of conduct.

Example: After class hours, I would suggest that you give careful consideration to the subject matter you have discussed.

- As with warnings, there is no evidence that is intended to prove anything in piece of advices, and hence there is no argument in the above passage.

  ***A statement of belief or opinion** is an expression about what someone happens to believe or think about something.

  Example: We believe that our university must develop and produce outstanding students who will perform with great skill and fulfill the demands of our nation.
- This passage does not make any claim that the belief or opinion is supported by evidence, or that it supports some conclusion, and hence does not contain an argument.

  ***Loosely associated statements** may be about the same general subject, but they lack a claim that one of them is proved by the others.
- **Example:** Not to honor men of worth will keep the people from contention; not to value goods that are hard to come by will keep them from theft; not to display what is desirable will keep them from being unsettled of mind.
- Because there is no claim that any of these statements provides evidence or reasons for believing another, there is no argument.

- ***A report** consists of a group of statements that convey information about some topic or event.
- **Example:** The great renaissance dam of Ethiopia has opened an employment opportunity for thousands of Ethiopians. In its completion, thirteen thousand Ethiopians are expected to be hired.
- These statements could serve as the premises of an argument, but because the author makes no claim that they support or imply anything, there is no argument.

One must be careful, though, with reports about arguments.

Example: "The Air Force faces a serious shortage of experienced pilots in the years ahead, because repeated overseas tours and the allure of high paying jobs with commercial airlines are winning out over lucrative bonuses to stay in the service," says a prominent Air Force official.

(Newspaper clipping)

Properly speaking, this passage is not an argument, because the author of the passage does not claim that anything is supported by evidence. Rather, the author reports the claim by the Air Force official that something is supported by evidence. If such passages are interpreted as containing arguments, it must be made clear that the argument is not the author's but one made by someone about whom the author is reporting.

2, Expository Passages

- An expository passage is a kind of discourse that **begins with a topic sentence followed by one or more sentences that develop the topic sentence.** If the objective is not to prove the topic sentence but only to expand it or elaborate it, then there is no argument.

  Example:

  There is a stylized relation of artist to mass audience in the sports, especially in baseball. Each player develops a style of his own-the swagger as he steps to the plate, the unique windup a pitcher has, the clean-swinging and hard-driving hits, the precision quickness and grace of infield and outfield, the sense of surplus power behind whatever is done.

- ***If the purpose of the subsequent sentences in the passage is not only to flesh out the topic sentence <u>but also to prove it, then the passage is an argument.</u>***

3, Illustrations

An illustration is an ***expression involving one or more examples that is intended to show what something means or how it is done.***

- Illustrations are often confused with arguments ***because many illustrations contain indicator words such as "thus".***

Example:

Chemical elements, as well as compounds, can be represented by molecular formulas. Thus, oxygen is represented by "O2", water by "H2O", and sodium chloride by "NaCl".

- This passage is not an argument, because it makes no claim that anything is being proved. The word "thus" indicates how something is done namely, how chemical elements and compounds can be represented by formulas.
- However, as with expository passages, **many illustrations can be taken as arguments. Such arguments are often called arguments from example.**
- Here is an instance of one:
  Example

Although most forms of cancer, if untreated, can cause death, not all cancers are life threatening. For example, basal cell carcinoma, the most common of all skin cancers, can produce disfigurement, but it almost never results in death.

- In this passage, the example given is intended to prove the truth of Not all cancers are life threatening. Thus, *the passage is best interpreted as an argument.*

4, Explanations

- An explanation is an expression that purports to **shed light on some event or phenomenon, which is usually accepted as a matter of fact.** It attempts to clarify, or describe such alike why something is happen that way or why something is what it is.

Example: Cows digest grass while humans cannot, because their digestive systems contain enzyme not found in humans.

- Every explanation is composed of two distinct components: the **explanandum** and **explanans.**
- The explanandum is the statement that describes the event or phenomenon to be explained, and the explanans is the statement or group of statements that purports to do the explaining.
- In the first example, the explanandum is the statement "Cows digest grass while humans cannot" and the explanans is "their cows digestive systems contain enzyme not found in humans".

- **Some passages can be interpreted as both explanations and arguments.**

Example:

Women become intoxicated by drinking a smaller amount of alcohol than men because men metabolize part of the alcohol before it reaches the bloodstream, whereas women do not.

- The purpose of this passage could be to prove the first statement to those who do not accept it as fact, and to shed light on that fact to those who do accept it. Alternately, the passage could be intended to prove the first statement to a person who accepts its truth on blind faith or incomplete experience, and simultaneously to shed light on this truth. Thus, this passage can be correctly interpreted as both an explanation and an argument.
- Perhaps the greatest problem confronting the effort to distinguish explanations from arguments lies in determining whether something is an accepted matter of fact. Obviously, what is accepted by one person may not be accepted by another.

5, Conditional Statements

- A conditional statement is an if . . . then . . .statement.
  Example: If you study hard, then you will score A grade.
- The component statement immediately following the if is called the antecedent (if-clause), and the one following the then is called the consequent (then-clause).
- However, there is an occasion that the order of antecedent and consequent is reversed.
  Example: You will score A grade if you study hard.
- Of course, a conditional statement as a whole may present evidence because it asserts a

relationship between statements. Yet when conditional statements are taken in this sense, there is still no argument, because there is then no separate claim that this evidence implies anything.

- *Therefore, a single conditional statement is not an argument.*
- *However, some conditional statements are similar to arguments in that they express the outcome of a reasoning process.* As such, they may be said to have a certain inferential content.

  Example:

  If destroying a political competitor gives you joy, then you have a low sense of morality.

- The link between the antecedent and consequent resembles the inferential link between the premises and conclusion of an argument. Yet there is a difference because the premises of an argument are claimed to be true, whereas no such claim is made for the antecedent of a conditional statement.
- however the **conditional statement can be re-expressed to form an argument** as follows:

  Example

  Destroying a political competitor gives you joy. Therefore, you have a low sense of morality.
- Here, we clearly have a premise and conclusion structure, and the conclusion is asserted on the basis of the premise. Therefore, it is argument.
- **A single conditional statement is not an argument.**
- **A conditional statement may serve as either the premise or the conclusion (or both) of an argument.**

  Example

  - If he is selling our national secretes to enemies, then he is a traitor.

    He is selling our national secretes to enemies.

    Therefore, he is a traitor.

- If he is selling our national secretes to enemies, then he is a traitor.

  If he is a traitor, then he must be punished by death.

  Therefore, If he is selling our national secretes to enemies, then he must be punished by death.

- ***Conditional statements are especially important in logic (and many other fields) because they express the relationship between necessary and sufficient conditions.***
- A is said to be a ***sufficient condition*** for B whenever the occurrence of A is all that is needed for the occurrence of B.
- For example, being a dog is a sufficient condition for being an animal. On the other hand, B is said to be a ***necessary condition*** for A whenever A cannot occur without the occurrence of B. Thus, being an animal is a necessary condition for being a dog.

❖ **In general,** non-argumentative passages may contain components that resemble the premises and conclusions of arguments, but they do not have an inferential claim.

❖ However, some passages like expository passages, illustrations, and explanations can be interpreted as arguments; and the inferential contents of conditional statements may be re-expressed to form arguments.

❖ Therefore, in deciding whether a passage contains an argument, you should look for three things:

1) indicator words such as "therefore," "since," "because," and so on;

2) an inferential relationship between the statements; and

3) typical kinds of non-arguments.

Lesson 3: Types of Arguments: Deduction and Induction

➢ The question we now address has to do with the strength of this claim

➢ Just how strongly is the conclusion claimed to follow from the premises. The reasoning process (inference) that an argument involves is expressed either with certainty or with probability. That is what the logician introduced the name *deduction* and *induction* for, respectively.

Deductive Arguments

- A ***deductive argument*** is an argument incorporating the claim that it is impossible for the conclusion to be false given that the premises are true.
- It is an argument in which the premises are claimed to support the conclusion in such a way that it is impossible for the premises to be true and the conclusion false.
- In such arguments, the conclusion is claimed to follow necessarily (conclusively) from the premises. Thus, deductive arguments are those that involve necessary reasoning.

Example-1:
All philosophers are critical thinkers.
Socrates is a philosopher.
Therefore, Socrates is a critical thinker.

Example-2:
All African footballers are blacks.
Messi is an African footballer.
It follows that, Messi is black.

- The above two examples are examples of a deductive argument. In both of them, the conclusion is claimed to follow from the premises with certainty; or the premises are claimed to support their corresponding conclusion with a strict necessity.
- If we, for example, assume that all philosophers are critical thinkers and that Socrates is a philosopher, then it is impossible that Socrates not be a critical thinker.
- Similarly, if we assume that all African footballers are blacks and that Messi is an African footballer, then it is impossible that Messi not be a black. Thus, we should interpret these arguments as deductive.

Inductive Arguments

- An ***inductive argument*** is an argument incorporating the claim that it is improbable for the conclusion to be false given that the premises are true.
- It is an argument in which the premises are claimed to support the conclusion in such a way that it is improbable for the premises to be true and the conclusion false.
- In such arguments, the conclusion is claimed to follow only probably from the premises.
- The premises may provide some considerable evidence for the conclusion but they do not imply (necessarily support) the conclusion.
- In this case, we might have sufficient condition (evidence) but we cannot be certain about the truth of the conclusion.

- However, this does not mean that the conclusion is wrong or unacceptable, where as it could be correct or acceptable but only based on probability.
- Thus, inductive arguments are those that involve probabilistic reasoning.

Example-1:
Most African leaders are blacks.
Mandela was an African leader.
Therefore, probably Mandela was black.
Example-2:
Almost all women are mammals.
Hanan is a woman.
Hence, Hanan is a mammal.

- Both of the above arguments are inductive. In both of them, the conclusion does not follow from the premises with strict necessity, but it does follow with some degree of probability.
- That is, the conclusion is claimed to follow from the premises only probably; or the premises are claimed to support their corresponding conclusion with a probability. In other words, if we assume that the premises are true, then based on that assumption it is probable that the conclusion is true.
- If we, for example, assume that most African leaders were blacks and that Mandela was an African leader, then it is improbable that Mandela not been a black, or it is probable that Mandela was black. But it is not impossible that Mandela not been a black.
- Similarly, if we assume that almost all women are mammals and that Hanan is a woman, then it is improbable that Hanan not be a mammal, or it is probable that Hanan is a mammal. But it is not impossible that Hanan not be a mammal. Thus, the above arguments are best interpreted as inductive.

Differentiating Deductive and Inductive Arguments

- There are three factors that influence the decision about the deductiveness or inductiveness of an argument‘s inferential claim.
  1. The occurrence of special indicator words
- Words like certainly, necessarily, absolutely, and definitely indicate that the argument should be taken as deductive, whereas words like, probable improbable, plausible,

implausible, likely, unlikely, and reasonable to conclude suggest that an argument is inductive.

2 The actual strength of the inferential link between premises and conclusion

- If the conclusion actually does follow with strict necessity from the premises, the argument is clearly deductive. In such an argument, it is impossible for the premises to be true and the conclusion false. If, on the other hand, the conclusion of an argument does not follow with strict necessity but does follow probably, it is usually best to interpret it as inductive argument.

3 The character or form of argumentation the arguers use.

Instances of Deductive Argumentative Forms

- Many arguments have a distinctive character or form that indicates that the premises are supposed to provide absolute support for the conclusion.

- ***Argument based on mathematics***: it is an argument in which the conclusions depend on some purely arithmetic or geometric computation or measurement. For example, you can put two orange and three bananas in a bag and conclude that the bag contains five fruits.
- ***Arguments based on definition***: it is an argument in which the conclusion is claimed to depend merely up on the definition of some words or phrase used in the premise or conclusion. For example, one may argue that Angel is honest; it is follows that Angel tells the truth.
- ***Syllogisms*** are arguments consisting of exactly two premises and one conclusion. Syllogisms can be categorized into three groups; categorical, hypothetical, and disjunctive syllogism.
- ***Categorical syllogism***: a syllogism is an argument consisting of exactly two premises and one conclusion. Categorical syllogism is a syllogism in which the statement begins with one of the words all, no and some.

Example

All Egyptians are Muslims.

No Muslim is a Christian.

Hence, no Egyptian is a Christian.

- ***Hypothetical syllogism*:** It is a syllogism having a conditional statement for one or both of its premises.

  Example:

  If you study hard, then you will graduate with Distinction.

  If you graduate with Distinction, then you will get a rewarding job.

  Therefore, if you study hard, then you will get a rewarding job.

- ***Disjunctive syllogism***: it is a syllogism having a disjunctive statement. (I.e. an "either … or" statement.

  Example:

  Rewina is either Ethiopian or Eritrean.

  Rewina is not Eritrean.

  Therefore, Rewina is Ethiopian.

Instances of Inductive Argumentative Forms

- ***Prediction:*** in a prediction the premises deals with some known event in the present or the past and the conclusions moves beyond this event to some event to relative future. **For example**, one may argue that because certain clouds develop in the center of the highland, a rain will fall within twenty-four hours.
- ***An argument from analogy***: It is an argument that depends on the existence of an analogy or similarity between two things or state of affairs.
- ***An inductive generalization***: it is an argument that proceeds from the knowledge of a selected sample to some claim about the whole group.
  - Because the members of the sample have a certain characteristics, it is argued that all members of the group have the same characteristics.
- ***An argument from authority***: it is an argument in which the conclusions rest upon a statement made by some presumed authority or witness.
  - A lawyer, for instance, may argue that the person is guilty because an eyewitness testifies to that effect under oath.

- ***Arguments based on sign***: it is an argument that proceeds from the knowledge of a certain sign to the knowledge of a thing or situation that the sign symbolizes.
  - For instance, one may infer that after observing 'No Parking' sign posted on the side of a road, the area is not allowed for parking. But because the sign might be displaced or in error about the area or forgotten, conclusion follows only probably.
- ***A causal inference*:** it is an argument which proceed from the knowledge of a cause to the knowledge of an effect, or conversely, from the knowledge of an effect to knowledge of a cause.
  - For example, from the knowledge that a bottle of water had been accidentally left in the freezer overnight, someone might conclude that it had frozen (cause to effect).

- ***Furthermore Considerations***
  - It should be noted that the various subspecies of inductive arguments listed here are not intended to be mutually exclusive. Overlaps can and do occur. For example, many causal inferences that proceed from cause to effect also qualify as predictions.
  - We should take care not to confuse arguments in geometry, which are always deductive, with arguments from analogy or inductive generalizations.
  - One broad classification of arguments not listed in this survey is *scientific arguments*. Arguments that occur in science can be either inductive or deductive, depending on the circumstances.
  - In general, arguments aimed at the discovery of a law of nature are usually considered ***inductive***. Another type of argument that occurs in science has to do with the application of known laws to specific circumstances. Arguments of this sort are often considered to be **deductive**, but only with certain reservations.
  - A final point needs to be made about the distinction between inductive and deductive arguments. *There is a tradition extending back to the time of Aristotle that holds that inductive arguments are those that proceed from the particular to the general, while deductive arguments are those that proceed from the general to the particular.*
  - *In fact, there are deductive arguments that proceed from the general to the general, from the particular to the particular, and from the particular to the general, as well as from the general to the particular; and there are inductive arguments that do the same.*

Evaluating Arguments

Evaluating Deductive Arguments: Validity, Truth, and Soundness

❖ ***Deduction and Validity***

- If the premises do in fact support the conclusions in this way the arguments is said to be *valid*; if not, it is *invalid*.
- Thus, a ***valid deductive argument*** is an argument such that if the premises are assumed true, it is impossible for the conclusion to be false. In such arguments, the conclusion follows with strict necessity from the premises.
- Conversely, an ***invalid deductive argument*** is an argument such that if the premises are assumed true, it is possible for the conclusion to be false.
- In these arguments, the conclusion does not follow with strict necessity from the premises, even though it is claimed to.

Consider the following examples:

Example-1:

All men are mammals.

All bulls are men.

Therefore, all bulls are mammals.

Example-2:

All philosophers are rational.

Socrates was rational.

Therefore, Socrates was a philosopher.

- The first example is valid argument, because the conclusion actually followed from the premises with a strict necessity. If all men are assumed as mammals and bulls as men, then it is impossible for bulls not be mammals. Hence, the argument is valid.
- The second example is invalid argument, because the conclusion did not actually follow from the premises with a strict necessity, even though it is claimed to.

❖ The above definitions of valid and invalid arguments, along with their corresponding examples, lead us into two immediate conclusions. **The first** is that there is no middle ground between valid and invalid. An argument is either valid or invalid.

❖ **The second** consequence is that there is only an indirect relation between validity and truth. For an argument to be valid it is not necessary that either the premises or the conclusions be true, but merely that if the premises assumed true, it is impossible for the conclusion be false.

- Thus, the validity of argument is the connection between premise and conclusion rather than on the actual truth or falsity of the statement formed the argument.
- There are ***four possibilities*** with respect to the truth or falsity of the premises and conclusion of a given argument:

1) True premises and True conclusion,
2) True premises and False conclusion,
3) False premises and True conclusion, and
4) False premises and False conclusion.

- Note that all of the above possibilities, except the second case (true premises and false conclusion), allow for both valid and invalid arguments. That is, the second case does not allow for valid arguments. As we have just seen, any argument having this combination is necessarily invalid. Let us discuss these possibilities in detail with examples.

❖ ***Validity and Truth Value***

Possibility # 1: A combination of *True premises and True conclusion* (the first case) allows for

- both valid and invalid arguments. Consider the following examples:

Example-1 (Valid):

All women are mammals. (Tp)
My mother is a mammal. (Tp)
Therefore, my mother is a woman. (Tc)

Example-2 (Invalid):

All philosophers are critical thinkers. (Tp)
Plato was a critical thinker. (Tp)
Therefore, Plato was a philosopher. (Tc)

Possibility # 2: A combination of *True premises and false conclusion* (the second case) allows only for invalid arguments. Consider the following example:

Example-1 (Invalid):

All biologists are scientists. (Tp)

John Nash was a scientist. (Tp)

Therefore, John Nash was a biologist. (Fc)

Based on the features of validity, the above example, which combines *True premises and False conclusion*, is an invalid argument. A valid argument with such combination does not exist.

Possibility # 3: A combination of *False premises and True conclusion* (the third case) allows for both valid and invalid arguments. Consider the following examples:

Example-1 (Valid):

All birds are mammals. (Fp)

All women are birds. (Fp)

Therefore, all women are mammals. (Tc)

Example-2 (Invalid):

All birds are mammals. (Fp)

All ostriches are mammals. (Fp)

Therefore, all ostriches are birds. (Tc)

Possibility # 4: A combination of *False premises and False conclusion* (the fourth case) allows for both valid and invalid arguments. Consider the following examples:

Example-1 (Valid):

All Americans are Ethiopians. (Fp)

All Egyptians are Americans. (Fp)

Thus, all Egyptians are Ethiopians. (Fc)

Example-2 (Invalid):

All birds are mammals. (Fp)

All ants are mammals. (Fp)

Therefore, all ants are birds. (Fc)

- In general, the basic idea of evaluating deductive argument, validity (valid and invalid) is not something that is determined by the actual truth or falsity of the premises and conclusion.

- Rather, validity is something that is determined by the relationship between premises and conclusion. ***The question is not whether premises and conclusion are true or false, but whether the premises support the conclusion.***
- ***Nevertheless, there is one arrangement of truth and falsity in the premises and conclusion that does determine the issue of validity.***

❖ Deduction and Soundness

A ***sound argument*** is a deductive argument that is *valid* and has *all true premises.* Both conditions must be met for an argument to be sound, and if either is missing the argument is unsound.

Thus, an ***unsound argument*** is a deductive argument that is either valid with one or more false premises, or invalid, or both.

Sound Argument = A valid argument + All true premises

Evaluating Inductive Arguments: Strength, Truth, and Cogency

❖ *Induction and Strength*

- If the premises do in fact support the conclusions in this way the arguments is said to be *strong*; if not, it is *weak*.
- Thus, a ***strong inductive argument*** is an argument such that if the premises are assumed true, it is improbable for the conclusion to be false. In such arguments, the conclusion follows probably from the premises.
- Conversely, a ***weak inductive argument*** is an argument such that if the premises are assumed true, it is probable for the conclusions to be false. In these arguments, the conclusion does not follow probably from the premises, even though it is claimed to. Consider the following examples:

Example-1:

This barrel contains one hundred apples.

Eighty apples selected at random were found tasty.
Therefore, probably all one hundred apples are tasty.

Example-2:

This barrel contains one hundred apples.
Three apples selected at random were found tasty.
Therefore, probably all one hundred apples are tasty.

The first example is strong argument, because the conclusion actually follows probably from the premises. The second example is weak argument, because the conclusion does not actually follow probably from the premises, even though it is claimed to. The procedure for testing the strength of inductive arguments runs parallel to the procedure for deduction.

❖ ***Strength and Truth Value***

- Two immediate conclusions follow from the above definitions and examples of strong and weak arguments.
- ***The first is that***, unlike the validity and invalidity of deductive arguments, the strength and weakness of inductive arguments admit ***certain form of degrees***.
- To be considered strong, an inductive argument must have a conclusion that is more probable than improbable.
- In inductive arguments, there is no absolutely strong nor absolutely weak argument. For instance, the first is not absolutely weak nor the second absolutely strong.
- Both arguments would be strengthened or weakened by the random selection of a larger or smaller sample.
- The incorporation of additional premises into inductive arguments will also generally tend to strength or weaken it.
- For example, if the premise "one un-tasty apple that had been found earlier was removed" were added to the second argument, the argument would presumably be weakened.

- ***The second*** consequence is that, *as validity and invalidity, strength and weakness are only indirectly related to the truth values of their premises.*
- The *central question in determining strength or weakness is whether the conclusion would probably true if the premises are assumed true.*
- For an argument to be strong it is not necessary that either the premises or the conclusions be true, but merely that if the premises assumed true, it is improbable for the conclusion be false.
- That is, we do not have to know whether the premise of an argument is actually true in order to determine its strength (strong or weak).

- To test an argument for strength, what we need to do is to assume the premise true and then to see whether the conclusion follows more/less probably from the premise.
- Thus, *the strength or weakness of an inductive argument results not from the actual truth or falsity of the premises and conclusion, but from the probabilistic support the premises give to the conclusion.*

- We have said earlier that there are ***four possibilities*** with respect to the truth or falsity of the premises and conclusion of a given argument: *True premises and True conclusion, True premises and False conclusion, False premises and True conclusion, and False premises and False conclusion.*
- These possibilities work in inductive arguments as well. Note that all of the above possibilities, ***except the second case*** (true premises and false conclusion), allow for both strong and weak arguments.
- That is, the second case does not allow for strong arguments.
- ***There is one arrangement of truth and falsity in the premises and conclusion that does determine the issue of strength. Thus, any inductive argument having actually true premises and an actually false conclusion is weak.***

❖ *Induction and Cogency*

- Depending on their actual ability, (assuming that they already have actually accomplished their inferential claims by being strong), to accomplish their factual claims, inductive arguments can be either *cogent* or *uncogent*.
- A ***cogent argument*** is an inductive argument that is *strong* and has *all true premises.*
- Thus, an ***uncogent argument*** is an inductive argument that is either strong with one or more false premises, or weak, or both.
- ***Because the conclusion of a cogent argument is genuinely supported by true premises, it follows that the conclusion of every cogent argument is probably true.***
- A cogent argument is the *inductive analogue of a sound deductive argument and is what is meant by a good'' inductive argument without qualification*.
  Cogent Argument = A strong argument + All true premises

There is a difference, however, between sound and cogent arguments in regard to the true premise requirement. In a sound argument, it is only necessary that the premises be true and nothing more. Given such premises and good reasoning, a true conclusion is guaranteed. In a cogent argument, on the other hand, the premises must not only be true, they must also not ignore some important piece of evidence that outweighs the given evidence and entails a quite different conclusion. That is, if the premises reflect all the important factors, then the argument is cogent; if not, then obviously the argument is not cogent. Thus, for cogency, the premises must not only be true but also not overlook some important factor that outweighs the given evidence and requires a different conclusion.

CHAPTER THREE

LOGIC AND LANGUAGE

Lesson 1: Philosophy of Language: An overview

What is Philosophy of Language?

- One of the most fundamental questions asked in Philosophy of Language is "*what is language (in general terms)?"*
- According to **semiotics**, language is the mere manipulation and use of symbols in order to draw attention to signified content.
- Semiotics is the study of sign processes in communication and of how meaning is constructed and understood.
- Philosophy of Language is the reasoned inquiry into the *origins of language, nature of meaning, the usage and cognition of language,* and *the relationship between language and reality*.
- It is an important discipline in its own right, and hence, it poses questions like
    - ❖ "What is meaning?"
    - ❖ "How does language refer to the real world?"
    - ❖ "Is language learned or is it innate?"
    - ❖ "How does the meaning of a sentence emerge out of its parts?, and other related issues.
- However there is a difference between philosophy of language and Linguistics, because Linguistics is the field of study that asks questions like: What distinguishes one particular language from another e.g. what is it that makes "English" English? What is the difference between Spanish and French?
- Linguists, like Noam Chomsky have emphasized the role of "***grammar" and syntax*** (the rules that govern the structure of sentences) as a characteristic of any language.
- Chomsky believes that humans are born with an ***innate*** understanding of what he calls "universal grammar" (an innate set of linguistic principles shared by all humans) and a child's exposure to a particular language just triggers this antecedent knowledge.

- Chomsky begins with the study of people's ***internal language*** (what he calls "I-languages"), which are based upon certain rules which generate grammars, supported in part by the conviction that there is no clear, general and principled difference between one language and the next, and which may apply across the field of all languages.
- Other attempts, which he dubs "E-languages", have tried to explain a *language as usage within a specific speech community with a specific set of well-formed utterances in mind.*
- Translation and interpretation present other problems to philosophers of language.
- The resulting view is called ***Semantic Holism***, a type of Holism which holds that meaning is not something that is associated with a single word or sentence, but can only be attributed to a whole language (if at all).

1.2 A Brief Note on the Debates and History of Philosophy of Language

- **Plato** generally considered that the ***names of things are determined by nature,*** with each phoneme (the smallest structural unit that distinguishes meaning) representing basic ideas or sentiments, and that convention only has a small part to play.
- **Aristotle** held that the meaning of a predicate (the way a subject is modified or described in a sentence) is established through an ***abstraction of the similarities between various individual things*** (a theory later known as Nominalism). His assumption that these similarities are constituted by a real commonality of form, however, also makes him a proponent of moderate Realism.
- The Stoic philosophers made important contributions to the analysis of grammar, distinguishing five parts of speech: ***nouns, verbs, appellatives, conjunctions and articles.***
- What they called the **lektón** (the meaning, or sense, of every term) gave rise to the important concept of the proposition of a sentence.
- The **Scholastics of the medieval era** were greatly interested in the subtleties of language and its usage, provoked to some extent by the necessity of translating Greek texts into Latin.
- They considered Logic to be a "science of language", and anticipated many of the most interesting problems of modern Philosophy of Language, including the phenomena of ***vagueness and ambiguity,*** the doctrines of proper and improper supposition and the study of categorematic and syncategorematic words and terms.

- Linguists of the ***Renaissance period*** were particularly interested in the idea of a philosophical language (or universal language), spurred on by the gradual discovery in the West of Chinese characters and Egyptian hieroglyphs.
- The philosophical study of language, finally, began to play a more central role in Western philosophy in the late **19**th and **20**th Centuries, especially philosophical branches of Analytic Philosophy and philosophy as a whole was understood to be purely a matter of Philosophy of Language.
- To sum up, philosophy of language is the reasoned inquiry into the nature, origins, and usage of language. As a topic, the philosophy of language, particularly for **analytic Philosophers**, has been concerned with four central problems: the nature of meaning, language use, language cognition, and the relationship between language, logic and reality. For **continental philosophers**, however, the philosophy of language tends to be dealt with, not as a separate topic, but as a part of logic and other field of studies.

1.3 Some Philosophical Approaches to the Nature of Meaning

There are two essentially different types of linguistic meaning: ***conceptual meaning*** (which refers to the definitions of words themselves, and the features of those definitions, which can be treated using semantic feature analysis) and ***associative meaning*** (which refers to the individual mental understandings of the speaker, and which may be ***connotative, collocative, social, affective, reflected or thematic***).

There are several approaches to the philosophical nature of meaning. Among others, the following are the major ones:

1) ***Idea theories:*** these theories claim that meanings are purely mental contents provoked by signs. This approach is mainly associated with the British Empiricist traditions of John Locke, George Berkeley and David Hume, though some contemporary theorists have renewed it under the guise of semantic internalism.

2) ***Truth-conditional theories****:* these theories hold meaning to be the conditions under which an expression may be true or false. This tradition goes back to Gottlob Frege, although there has also been much modern work in this area.

3) ***Use theories***: these theories understand meaning to involve or be related to speech acts and particular utterances, not the expressions themselves. This approach was pioneered by Ludwig Wittgenstein and his Communitarian view of language.

4) ***Reference theories*** (or ***semantic externalism***): these theories view meaning to be equivalent to those things in the world that are actually connected to signs. Tyler Burge and Saul Kripke are the best known proponents of this approach.

5) **Verificationist theories**: these theories associate the meaning of a sentence with its method of verification or falsification. This Verificationist approach was adopted by the Logical Positivists of the early 20th century.

6) ***Pragmatist theories***: these theories maintain that the meaning or understanding of a sentence is determined by the consequences of its application?

Lesson 2: Logic and Meaning

2.1 The Functions of Language: Cognitive and Emotive Meanings

- Words are the most basic units in any language, and thus the most important thing in every argument.
- Ordinary language serves various functions in our day to-day lives.
- The twentieth-century philosopher Ludwig Wittgenstein thought the number of these functions to be virtually unlimited. Thus, among other things, language is used to:

Ask questions	*Tell jokes*
Tell stories	*Flirt with someone*
Tell lies	*Give directions*
Guess at answers	*Sing songs*
Form hypotheses	*Issue commands*
Launch verbal assaults	*Greet someone and so on.*

❖ For our purpose, two linguistic functions are particularly important:

(1) To convey information (**cognitive meaning**) and

(2) To express or evoke feelings (**emotive meaning**).

Consider, for example, the following Statements:

Examples:

"Death penalty, which is legal in thirty-six states, has been carried out most often in Georgia; however, since 1977 Texas holds the record for the greatest number of executions."

"Death penalty is a cruel and inhuman form of punishment in which hapless prisoners are dragged from their cells and summarily slaughtered only to satiate the bloodlust of a vengeful public."

*The statement in Example 1 is intended primarily to convey information while the statement in Example 2 is intended, **at least in part**, to express or evoke feelings.

*These statements accomplish their respective functions through the distinct kinds of terminology in which they are phrased.

- ❖ Thus, in Example 1 the words legal, thirty-six, most often, Georgia, record, etc. have primarily a cognitive meaning,
- ❖ While in Example 2 the words cruel, inhuman, hapless, dragged, slaughtered, bloodlust, and vengeful have a strong emotive meaning.
- ❖ Of course, these latter words have cognitive meaning as well. Cruel means tending to hurt others, inhuman means inappropriate for humans, hapless means unfortunate, and so on.

The emotively charged statement about the death penalty illustrates two important Points:

First, statements of this sort usually have both cognitive meaning and emotive meaning.

- Therefore, since logic is concerned chiefly with cognitive meaning, it is important that we be able to distinguish and disengage the cognitive meaning of such statements from the emotive meaning.

Second, part of the cognitive meaning of such statements is a ***value claim***.

- A *value claim* is a claim that something is good, bad, right, wrong, or better, worse, more important or less important than some other thing. For example, the statement about the death penalty asserts the value claim that the death penalty is wrong or immoral
- Thus, for the purposes of logic, it is important that we be able to disengage the value claims of emotively charged statements from the emotive meaning and treat these claims as separate statements.

These observations suggest the reason that people use emotive terminology as often as they do. Value claims as such normally require evidence to support them. For example, the claim that the death penalty is immoral cannot simply stand by itself. It cries out for reasons to support it. But when value claims are couched in emotive terminology, the emotive ==clothing‘‘ tends to obscure
the fact that a value claim is being made, and it simultaneously gives psychological momentum to that claim. As a result, readers and listeners are inclined to swallow the value claim whole without any evidence. Furthermore, the intellectual laziness of many speakers and writers, combined with their inability to supply supporting reasons for their value claims, reinforces the desirability of couching such claims in emotive terminology. Many people, for example, will refer to someone as ==crazy,‘‘ ==stupid,‘‘ or ==weird‘‘ when they want to express the claim that what that person is doing is bad or wrong and when they are unable or unwilling to give reasons

for this claim.

Emotive Terminologies in Arguments

In arguments, emotive terminology accomplishes basically the same function as emotive terminology in statements.

- It allows the arguer to make value claims about the subject matter of the argument without providing evidence, and it gives the argument a kind of steamroller quality by which it tends to crush potential counter arguments before the reader or listener has a chance to think of them.
- This steamroller quality also tends to paralyze the logical thought processes of readers or listeners so that they are not able to see illogical arguments in their true light.
- These effects of emotive terminology can be avoided if the reader or listener will disengage the value claims and other cognitive meanings from the emotive meaning of the language and re-express them as distinct premises.

Deficiency of Cognitive Meanings: Vagueness and Ambiguity

Two problems that affect our cognitive use of language are vagueness and ambiguity. A linguistic expression is said to be

- ***Vague*** if there are borderline cases in which it is impossible to tell if the expression applies or does not apply.
- Vague expressions often allow for a continuous range of interpretations. The meaning is hazy, obscure, and imprecise.
  - For example, words such as love, happiness, peace, excessive, fresh, rich, poor, normal, conservative, and polluted are vague.
- We can rarely tell with any precision whether they apply to a given situation or not. How fresh does something have to be in order to be called fresh?
- Vagueness can also affect entire statements. Such vagueness may arise not so much from the individual words as from the way in which the words are combined.
  - For example, suppose someone was to say, today our job situation is more transparent. First, what is the meaning of job situation‘‘? Does it refer to finding a job, keeping a job, filling a job, completing a job, or bidding on a job? And what exactly does it mean for a job situation to be transparent‘‘? Does it mean that the job is more easily perceived or

comprehended? That the job is more easily completed? That we can anticipate our future job needs more clearly? Or what else?

- Not all cases of vagueness, however, are problematic. To describe an acquaintance as tall, or thin often causes no trouble in ordinary conversation. Indeed, it may be overly burdensome to describe this person in more precise language.
- Trouble arises only when the language is not sufficiently precise for what the situation demands.

- The other way in which cognitive meanings can be defective is ambiguity. An expression is said to be
- ***Ambiguous*** when it can be interpreted as having more than one clearly distinct meaning in a given context.
  - For example, words such as light, proper, critical, stress, mad, inflate, chest, bank, sound, and race can be used ambiguously.
  - Thus, if one were to describe a beer as a light pilsner, does this mean that the beer is light in color, light in calories, or light in taste?
  - If one were to describe an action as proper, does this mean proper in a moral sense or proper in the sense of being socially acceptable?
  - Or if one were to describe a person as critical, does this mean that the person is essential for a certain task or that the person tends to criticize others?

➢ As is the case with vagueness, ambiguity can also **affect entire statements.** Such ambiguity often results from the way in which certain words are combined.

❖ In a vague expression there is a **blur** of meaning, whereas in an ambiguous expression there is a **mix-up** of otherwise clear meanings.

❖ However, *there are many forms of expression that are ambiguous in one context and vague in another*.

- For example, the word slow in one context could mean either mentally retarded or physically slow, but when the word refers to physical slowness, it could be vague. How slow is slow?

❖ The role of vagueness and ambiguity in arguments may be conveniently explored in the context of *conflicting arguments between individuals*.

Forms of Disputes in Logic: Verbal and Factual Disputes

- Disputes that arise over the meaning of language are called ***verbal disputes*.** These are disputes in which the apparent *conflict is not genuine and can be resolved by coming to agreement about how some words or phrases is to be understood*.

Example-1:

Kassa: *Mrs. Zenebech abuses her children. And how do I know that? I saw her spank one of her kids the other day after the kid misbehaved*.

Jemal: *Don"t be silly. Kids need discipline, and by disciplining her children, Mrs. Zenebech is showing that she loves them*.

- Here, the problem surrounds the **vagueness** of the words **abuse** and **discipline**.

Example-2:

Mullu: *I"m afraid that Dagim is guilty of cheating in the exam. Last night he confessed to me that he was sate closer to Tsedale, who is the most excellent student in our class, and takes almost all answers from her.*

Worku: *No, you couldn"t be more mistaken. In this country, no one is guilty until proven so in a court of law, and Dagim has not yet even been accused of anything.*

- In this example, the dispute arises over the **ambiguity** of the word **guilty**. Mullu is using the word in the *moral sense*. Worku, on the other hand, is using the word in the *legal sense.*

- Some disputes arise over a disagreement about facts, and these are called ***factual disputes***.

Example:

Debebe: *I know that Fisseha stole a computer from the old school house. Aberash told me that she saw Fisseha do it.*

Maru: *That"s ridiculous! Fisseha has never stolen anything in his life. Aberash hates Fisseha, and she is trying to pin the theft on him only to shield her criminal boyfriend.*

- Here, the dispute centers on the factual issues of whether Aberash told the truth and whether Fisseha stole the computer.
- Disputes arisen because of the truth or falsity of claims are ***factual disputes***.

- In dealing with disputes, the first question is whether the dispute is factual, verbal, or some combination of the two.

2.2 The Intension and Extension of Terms

- The main task of logic is the evaluation of arguments.
- Argument is the combination of premises and conclusion and this combination is the result of statements
- The information content of statements are terms
- A ***term*** is any word or arrangement of words that may serve as the subject of a statement.

❖ Terms consist of proper names, common names, and descriptive phrases. Here are some examples:

Proper Names	**Common Names**	**Descriptive Phrases**
Abebe	*Animal*	*First Prime Minister of Ethiopia*
South Ethiopia	*Activity*	*Author of Oromay*
The Ethiopian Parliament	*Person*	*Those who study hard*
Girmaa Gamachuu	*House*	

❖ Words that are not terms include verbs, non-substantive adjectives, adverbs, prepositions, conjunctions, and all non-syntactic arrangements of words. The following words or phrases are not terms; none can serve as the subject of a statement:

dictatorial	*above and beyond*	*craves*
runs quickly	*moreover*	*cabbages into again the forest*

❖ At this point, it is important to distinguish ***the use of a word*** from ***the mention of a word***.

- The word "wherever," for example, is not a term, but "wherever" (in quotes) can serve as the subject of a statement, such as
- "Wherever" is an eight-letter word. (mentioned)
- I will follow you wherever you go.(used)

❖ Words are usually considered to be symbols, and the entities they symbolize are usually called ***meanings***.

❖ Terms, being made up of words, are also symbols, but the meanings they symbolize are of two kinds: **intensional and extensional.**

- ❖ The ***intensional meaning*** (***intension***, ***connotation, sense***) consists of the qualities or attributes that the term connotes,
- ❖ The ***extensional meaning*** (***extension***, ***denotation, reference***) consists of the members of the class that the term denotes.
- ❖ For example, **the intensional meaning of the term cat**‘‘ consists of the attributes of being furry, of having four legs, of moving in a certain way, of emitting certain sounds, and so on, while **the extensional meaning consists of cats** themselves- all the cats in the universe.

- In grammar, connotation refers to the subtle nuances of a word, whereas denotation refers to the word‘s direct and specific meaning.
- ➢ *Because terms symbolize meanings to individual persons, it is inevitable for subjective elements to invade the notion of connotation.*
- **To a cat lover the term cat**, for example, might connote the attributes of being cuddly and adorable, **while to someone who hates cats** it might connote the attributes of being obnoxious and disgusting.
- To avoid this problem, logicians typically restrict the meaning of connotation to what is usually called the ***conventional connotation***.
- The **conventional connotation** of a term includes the attributes that the term commonly calls forth in the minds of competent speakers of the language.
- Under this interpretation, the connotation of a term remains more or less the same from person to person and from time to time.
- ➢ *The denotation of a term also typically remains the same from person to person, but it may change with the passage of time.*
    - o For example the denotation of “currently living cat” is constantly fluctuating as some cats die and others are born.
- ➢ *Sometimes the denotation of a term can change radically with the passage of time.*
    - o For example the terms “currently living dodo bird” and “current king of France” for example, at one time denoted actually existing entities, but today all such entities have perished.
- Accordingly, these terms now have what is called ***empty extension***. They are said to denote the empty (or null) class, the class that has no members.

- Their class members are either extinct or have no single living testimony.
- The issue is that **intensional meaning determine extensional meaning of terms** (there is no extensional meaning without extensional meaning).
- *One kind of term that raises problems for the intension-determines-extension rule is proper names.* For example, the name "Abebe" might not appear to have any intension, but it denotes the person who has this name.

  *One possible solution to this problem is that names are shorthand symbols for descriptions or bundles of descriptions. For example, "Abebe" could be shorthand for the first year student of Civil Engineering department, since 2005 E.C. or the person who is a representative of this section

*Another possible solution to the problem of proper names is that the intension of proper names consists of the causal chain of events leading from the point at which the name is first assigned to the point at which a certain person learns about the name. Thus, the first link in such a chain might be the baptismal event at which the name ==Abebe‖ is given to a certain infant, the second link would be the event in which a certain third party is informed of the first event, and so on. This entire chain of events extending through the linguistic community would then constitute the intension of ==Abebe.'' Thus, we conclude that for all terms, including proper names, intension determines extension.

The increasing or decreasing attributes of intensional extensional meaning

- An intensional and extensional meaning of a term can be increased or decreased according to the increase or decrease of attributes and set of things added to the term.
- Thereby it is possible to arrange the sequence of the decreasing or increasing meaning of terms.
- When the intensional meaning increases, the extensional meaning decreases and vice versa.

Let us see the following examples:

Increasing intension*: animal, mammal, feline, tiger*

Increasing extension*: tiger, feline, mammal, animal*

Decreasing intension*: tiger, feline, mammal, animal*

Decreasing extension*: animal, mammal, feline, tiger*

- There are, however, **some exceptions**. Consider the following series:

Unicorn; unicorn with blue eyes; unicorn with blue eyes and green horn;
Unicorn with blue eyes, green horn, and a weight of over 400 pounds

- Each term in this series has *empty extension*; so, while the series exhibits the order of increasing intension, it does not exhibit the order of decreasing extension.
- Here is another, slightly different, example:

living human being; living human being with a genetic code; living human being with a genetic code and a brain; living human being with a genetic code, a brain, and a height of less than 100 feet

In this series, none of the terms has empty extension, but each term has exactly the same extension as the others. Thus, while the intension increases with each successive term, once again the extension does not decrease.